ORTHOPEDIC CLINICS OF NORTH AMERICA

Orthop Clin N Am 34 (2003) 577–592

Cumulative Index 2003

Volume 34

January	ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION, PART II, pages 1–208
April	CHRONIC LOW BACK PAIN: ISSUES AND MANAGEMENT, PART I, pages 209–328
July	SPORTS INJURIES IN SCHOOL-AGE ATHLETES, pages 329–474
October	ADVANCED SHOULDER ARTHROSCOPY, pages 475–592

Note: Page numbers of article titles are in **boldface** type.

A

ACL. *See Anterior cruciate ligament (ACL).*

ACL injuries. *See Anterior cruciate ligament (ACL) injury.*

Acute patellar fracture
  during graft harvest in ACL surgery, 100–101

Acute proximal humeral physeal fracture
  in skeletally immature throwing athletes, 430–431

Acute tibial tubercle avulsion fractures, **397–403**
  associated injuries, 400
  classification of, 398–400
  clinical evaluation of, 400
  complications of, 402
  epidemiology of, 397
  imaging of, 400
  management of, 400–401
  mechanism of injury in, 398
  outcomes after, 401–402

Adolescent(s)
  athletic
    spondylolysis in, **461–467.** *See also Spondylolysis, in child and adolescent athletes.*
  idiopathic anterior knee pain in, **377–383.** *See also Anterior knee pain, idiopathic, in adolescents.*

Aggrecan
  of degenerating intervertebral disk, 213

Allogeneic soft-tissue grafts
  in ACL reconstruction, **19–30.** *See also Anterior cruciate ligament (ACL), reconstruction of, autogenous and allogeneic soft-tissue grafts in.*

Allograft(s)
  meniscal
    in ACL reconstruction, 144–145

Allograft osteochondral grafting
  for cartilage injury in ACL–deficient knee, 158–161

Allograft tendons
  ACL reconstruction with, **41–47**
    advantages of, 42
    choices for, 42–43
    disadvantages of, 42
    indications for, 41
    pitfalls in, 45–46
    technique for, 43–45

Ankle
  ossicles of
    in children, 448

Ankle disorders. *See also* specific disorder.
  in children
    congenital, 445–448
    developmental-related, 448–449
  in skeletally immature athletes, **445–459.** *See also under Children.*

Anterior ankle impingement syndrome
  in children, 456

Anterior cruciate ligament (ACL)
  injuries of. *See Anterior cruciate ligament (ACL) injuries.*
  reconstruction of
    arthritis and osteotomies in, **169–181.** *See also Arthritis, and osteotomies, in ACL reconstruction.*
    autogenous and allogeneic soft-tissue grafts in, **19–30**

0030-5898/03/$ – see front matter © 2003 Elsevier Inc. All rights reserved.
doi:10.1016/S0030-5898(03)00131-7

graft fixation in, 21–22
rehabilitation after
aggressive, 22–28
sources of graft tissue in, 19–20
surgical technique in, 23–28
assessment of stability in, 28
bone grafting of tunnels in, 28
Bone Mulch Screw insertion in, 25–27
counterbore preparation for WasherLoc in, 24–25
femoral tunnel placement in, 25
graft preparation in, 23–24
harvesting of tendon in, 23
passing and tensioning of graft in, 27
portal placement in, 24
tibial tunnel placement in, 24
WasherLoc insertion in, 27–28
tunnel placement in, 20–21
biomechanical testing in, 51–52
bone–patellar tendon graft in, **49–51**
bone tunnel preparation in, 50
ease of revision surgery in, 51
femoral tunnel in, 53–54
graft fixation in, 50–51
graft harvesting in, 49–50, 52–53
graft placement for patellar and quadriceps tendon, 55–56
graft preparation in, 53
prevention of windshield-wiper and synovial-bathing effects on, 50
tibial tunnel in, 54
central quadriceps free tendon in, **31–39**
materials and methods in, 31–32
results of, 32–38
complications of, **99–105**
graft fixation, 101–103
graft harvest–related, 99–101
graft tensioning, 104
tunnel replacement, 103–104
failed
arthritis in, 82
classification of, 79–87
defined, 79
extensor mechanism dysfunction in, 81–82
graft failure in, 82–87
loss of motion in, 80–81
graft selection in, 9
in skeletally immature individuals, **65–77.** *See also Anterior cruciate ligament (ACL) injuries, in skeletally immature individuals, reconstruction of.*
meniscal tears in, **139–147.** *See also Meniscal tears, in ACL reconstruction, approach to.*
revision, **79–98**
approach to, 87–93
bone tunnel placement in, 92–93
graft fixation in, 93
graft selection in, 90–91
hardware removal in, 91–92
intraoperative considerations in, 90–93
patient history in, 88
physical examination in, 88–89
preoperative evaluation in, 87–89
preoperative plan in, 90–93
prosthetic ligament removal in, 92
radiographic evaluation in, 89
rehabilitation after, 93
revision notchplasty in, 92
skin incisions in, 90
staging in, 90
semitendinosus autograft in
rationale for, 9–11
semitendinosus–gracilis graft in, 51, 56–61
distal fixation of graft in, 60–61
femoral tunnel in, 57–59
graft harvesting in, 56–57
passing graft in, 59–60
rehabilitation after, 61
tibial tunnel in, 59
surgical technique of, 52
with allograft tendons, **41–47.** *See also Allograft tendons, ACL reconstruction with.*
with hamstring tendon, **9–18.** *See also Hamstring tendon, in ACL reconstruction.*
harvesting of, **1–8.** *See also Hamstring tendon, in ACL reconstruction, harvesting of.*

Anterior cruciate ligament (ACL)–deficient knee
cartilage injury in
allograft osteochondral grafting in, 158–161
approach to, **149–167**
autogenous osteochondral grafting in, 157–158
autologous chondrocyte reimplantation in, 161–162
bone bruises, 151–152
cartilage stimulation via growth factors in, 162–163
diagnosis of, 152–153
healing of, 151
marrow-stimulating techniques in, 155–157
mechanism of, 150–151
radiofrequency in, 154–155
treatment of, 153–154
ACL–dependent scenarios and, 163–164
author's preferred, 163

cartilage stabilization and debridement, 153–154
nonoperative, 153
reconstructed ACL with new lesion, 164
surgical, 153
thermal modification–coblation chondroplasty, 154

Anterior cruciate ligament (ACL) injuries
case studies of, **183–202**
in skeletally immature persons, **355–363**
anatomy of, 65–66
clinical evaluation of, 358–359
developmental considerations related to, 356–357
epidemiology of, 65
functional instability assessment in, 68
historical perspective of, 355
imaging of, 67, 359
maturity assessment in, 67–68
natural history of, 66–67, 357–358
nonoperative treatment, 68–69
pathogenesis of, 65–66
patient history in, 67, 358–359
physical examination of, 67, 359
reconstruction of, 69–75
complete physeal reconstruction technique, 73–74
complications of, 75
indications for, 69
partial transphyseal reconstruction technique, 72–73
physeal-sparing technique, 70–72
rehabilitation after, 74–75
tibial eminence avulsion in, 75
treatment of, 359–362
nonoperative, 359–360
surgical, 360–362
indications for, 362
rehabilitation after, 362
rehabilitation of
advances in, **107–137**
articular cartilage pathology in, 128–129
concomitant procedures in, 124–129
for medial collateral ligament injury, 124
full passive knee extension in, 108–112
functional drills in, 119
graft type–specific, 119–124
in female athletes, 129–132
increasing applied loads in, 118–119
meniscus pathology in, 128
neuromuscular control restoration in, 115–118
patellar mobility restoration in, 112–113
postoperative inflammation reduction in, 113–114
principles of, 108–124
re-establishing voluntary quadriceps control in, 114–115
sport-specific training in, 119

Anterior glenohumeral instability
arthroscopic repair of, **529–537**
Bankart reconstruction in, 532–534
historical perspective of, 529–530
indications for, 531–532
physical examination before, 530–531
postoperative care, 534–536
preoperative planning in, 530–531
techniques in, 532–534

Anterior knee pain
described, 377
hip conditions associated with, 377–378
idiopathic
in adolescents, **377–383**
bipartite patella and, 378
described, 379–380
evaluation of, 379–380
fat pad irritation and, 378–379
Hoffa syndrome and, 378–379
lower-extremity rotational malalignment and, 379
Osgood-Schlatter disease and, 378
Sinding-Larsen-Johansson disease and, 378
symptoms of, 380
synovial plica and, 378
treatment of, 380–381

Anterior lumbar interbody fusion
described, 1–2

APLD. *See Automated percutaneous lumbar discectomy (APLD).*

Apophyseal injuries
in pediatric athletes, 407–408

Arthritis
and osteotomies
in ACL reconstruction, **169–181**
clinical dilemma involving, 169–177
complications of, 179
historical background of, 170
imaging studies in, 171
mechanism of injury in, 170
meniscal transplantation in, 179
nonoperative treatment of, 171
patient evaluation for, 170–171
preoperative planning in, 172–173
rehabilitation after, 176–177
results of, 177–179

surgical indications for, 171–172
surgical technique in, 173
valgus knee in, 175–176
varus knee in, 173–175
glenohumeral
management of, **559–566.** *See also Glenohumeral arthritis, management of.*
in failed ACL reconstruction, 82
in knee
management of, 561–562
inflammatory
of shoulder, 559–560

Arthroscopic biceps tenodesis, **499–506**
diagnosis of, 500
imaging studies in, 500
indications for, 499
pathology of, 499–500
patient history in, 500
physical examination in, 500
treatment of
indications for, 500–501
postoperative care, 503–504
techniques in, 501–503

Arthroscopy
for thrower's shoulder, **539–547.** *See also Thrower's shoulder, arthroscopic management of.*
in rotator cuff tear evaluation and management, **507–520.** *See also under Rotator cuff tears.*

Articular cartilage
function of, 149
structure of, 149–150

Athlete(s)
female
ACL injuries in
rehabilitation of, 129–132
glenohumeral arthritis in, 563–564
skeletally immature
ankle and foot disorders in, **445–459.** *See also Children.*
throwing
shoulder disorders in, **427–437.** *See also Shoulder disorders, in skeletally immature throwing athletes.*
young
acute and recurrent patellar instability in, **385–396.** *See also Patellar instability, acute and recurrent, in young athletes.*

Autogenous osteochondral grafting
for cartilage injury in ACL–deficient knee, 157–158

Autogenous soft-tissue grafts
in ACL reconstruction, **19–30.** *See also Anterior cruciate ligament (ACL), reconstruction of, autogenous and allogeneic soft-tissue grafts in.*

Autologous chondrocyte reimplantation
for cartilage injury in ACL–deficient knee, 161–162

Avascular necrosis
in glenohumeral arthritis, 560–561

B

Back pain
low
chronic
nerve root injuries in patients with, **221–230.** *See also Low back pain, chronic, nerve root injuries in patients with.*

Bankart reconstruction
in anterior glenohumeral instability repair, 532–534

Bipartite patella
anterior knee pain caused by, 378

Bone plug fracture
on patellar tendon
during ACL surgery, 100

Bone scan
in juvenile osteochondritis dissecans, 345–346

Bone–patellar tendon graft
in ACL reconstruction, **49–51.** *See also Anterior cruciate ligament (ACL), reconstruction of, bone–patellar tendon graft in.*

Breaching fat pad
during ACL surgery, 101

Bunion(s)
in children, 448

Bursoscopy
in bursal side of rotator cuff evaluation, 513–514

C

Calcific tendinitis
of shoulder, **567–575.** *See also Shoulder(s), calcific tendinitis of.*

Capitellar osteochondritis dissecans
in throwing athletes, 420–421
diagnosis of, 420–421

pathophysiology of, 420
risk factors for, 420
treatment of, 421

Cartilage
articular
function of, 149
structure of, 149–150

Cartilage injury
in ACL–deficient knee
approach to, **149–167.** *See also Anterior cruciate ligament (ACL)–deficient knee, cartilage injury in, approach to.*

Central canal stenosis
treatment of, 285

Central quadriceps free tendon
in ACL reconstruction, **31–39.** *See also Anterior cruciate ligament (ACL), reconstruction of, central quadriceps free tendon in.*

Cervical spine
in Down syndrome children, 441–442

Children
ankle and foot disorders in, **445–459**
anterior ankle impingement syndrome, 456
bunions, 448
congenital-related, 445–448
developmental-related, 448–449
flat feet, 446–448
fractures, 449–453. *See also* specific type and *Fracture(s).*
fragmentation of distal fibular epiphysis, 448–449
Freiberg infraction, 449
Kohler syndrome, 449
medial malleolus ossification center, 448
ossicles, 448
osteochondral lesions of talar dome, 453–454
osteochondroses, 449
posterior ankle impingement syndrome, 456–457
sprains, 454–456
tarsal coalition, 445–446
tendon insertion syndrome, 457
tendonitis, 457
athletic
overuse injuries in, **405–415.** *See also Overuse injuries, in pediatric athletes.*
spondylolysis in, **461–467.** *See also Spondylolysis, in child and adolescent athletes.*
with Down syndrome
sports participation of, **439–443**

Chondromodulin-I
of degenerating intervertebral disk, 213

Collagen
of degenerating intervertebral disk, 212–213

Contracture(s)
flexion. *See Flexion contractures.*

Core instability exercise
in patients with chronic low back pain, **245–254**
control of pelvis and lumbar spine in, 246–249
efficacy of, 251
implementation of
clinical factors in, 249–251
rationale for, 245–246

CT. *See Computed tomography (CT).*

Cyst(s)
ganglion
of shoulder, **521–529**
meniscal, 338

D

Decompression/laminotomy
for lumbar spinal stenosis
results of, 288

Deformity
lumbar spinal stenosis resulting from, 288

Degenerative scoliosis
lumbar spinal stenosis with
treatment of, 292

Degenerative spondylolisthesis
lumbar spinal stenosis with
treatment of, 288–290

Disc excision
lumbar spinal stenosis with, 290–292

Discectomy
revision
for failed decompression surgery for lumbar spine conditions, 313

Discoid meniscus, 334–338
causes of, 334
classification of, 334–335
diagnosis of, 335
historical background of, 334
imaging of, 335–336
synonyms of, 334
treatment of, 336–338

Distal fibular epiphysis
fragmentation of
in children, 448–449

Distraction laminoplasty
for lumbar spinal stenosis, 287

Down syndrome
children with
cervical spine concerns in, 439–441
hip instability in, 441–442
orthopedic issues related to, 439
patellofemoral instability in, 442
sports participation by, **439–443**
incidence of, 439

E

Elbow
Little League, 418–423

Elbow disorders
in throwing athletes, **417–426.** *See also* specific disorders, e.g., *Capitellar osteochondritis dissecans.*
acute UCL rupture, 423–424
capitellar osteochondritis dissecans, 420–421
flexion contracture, 421–422
fractures, 424
lateral epicondylitis, 425
Little League elbow, 418–423
medial epicondyle apophysitis, 419–420
olecranon injury, 422
protracted elbow pain, 423
radial head deformation, 421
tendon rupture, 424–425
traumatic injuries, 417–418
ulnar nerve subluxation, 424

Elbow injuries
in pediatric athletes, 410–411

Elbow pain
protracted
in throwing athletes, 423

Endoscopy
in bursal side of rotator cuff evaluation, 513–514

Epicondylitis
lateral
in throwing athletes, 425

Epiphysis
injuries to
in pediatric athletes, 410–411

ESWT. *See Extracorporeal shock wave therapy (ESWT).*

Exercise(s)
core instability
in patients with chronic low back pain, **245–254.** *See also Core instability exercise, in patients with chronic low back pain.*

Expansive lumbar laminoplasty
for lumbar spinal stenosis, 287

Extensor mechanism dysfunction
in failed ACL reconstruction, 81–82

Extracorporeal shock wave therapy (ESWT)
for calcific tendinitis of shoulder, 571

F

Fat pad
irritation of
anterior knee pain caused by, 378–379

Female athletes
ACL injuries in
rehabilitation of, 129–132

Fibronectin
of degenerating intervertebral disk, 213

Flat back
decompression surgery for lumbar spine conditions resulting in, 315

Flat feet
in children, 446–448

Flexion contracture
in throwing athletes, 421–422
diagnosis of, 422
pathophysiology of, 421–422
risk factors for, 422
treatment of, 422

Foot
flat
in children, 446–448
ossicles of
in children, 448

Foot disorders. *See also* specific disorder.
in children
congenital, 445–448
developmental-related, 448–449
in skeletally immature athletes, **445–459.** *See also under Children.*

Fracture(s)
acute proximal humeral physeal
in skeletally immature throwing athletes, 430–431
acute tibial tubercle avulsion, **397–403.** *See also Acute tibial tubercle avulsion fractures.*
bone plug
on patellar tendon
during ACL surgery, 99
in children, 449–453
Salter Harris fractures, 450
in throwing athletes, 424
of base of fifth metatarsal
in children, 452–453
stress
in children, 450–452
of lower extremity
in pediatric athletes, 406–407
of upper extremity
in pediatric athletes, 409–410
tibial eminence, **365–375.** *See also Tibial eminence fractures.*

Freiberg infraction
in children, 449

G

Gadolinium-enhanced MRI
in rotator cuff disease, 512–513

Ganglion cysts
of shoulder, **521–529**
clinical evaluation of, 523
diagnosis of, 523–524
imaging in, 523–524
pathogenesis of, 521-of shoulder
treatment of, 524–527

Glenohumeral arthritis
avascular necrosis in, 560–561
in athletes, 563–564
inflammatory, 559–560
management of, **559–566**
arthroscopic debridement in, 561
capsular release in, 562–563
concomitant procedures, 562–563
glenoidplasty in, 564

Glenohumeral instability
anterior
arthroscopic repair of, **529–537.** *See also Anterior glenohumeral instability, arthroscopic repair of.*
in skeletally immature throwing athletes, 432
posterior
arthroscopic repair of, **475–483.** *See also Posterior glenohumeral instability, arthroscopic repair of.*

Glenoidplasty
for glenohumeral arthritis, 564

Gracilis muscle
anatomy of, 2

Graft failure
in failed ACL reconstruction, 82–87

Graft fixation
during ACL surgery
complications of, 101–103
hamstring-related, 103
reconstruction of
complications of
patellar tendon–related, 101–103

Graft harvest
during ACL surgery
complications of
hamstring-related, 101
patellar tendon–related, 99–101
complications related to, 99–101

Graft tensioning
during ACL surgery
complications of, 104

Growth factors
in degenerating intervertebral disk, 215–217

Growth plate trauma
in pediatric athletes, 411

H

Hamstring tendon
graft fixation of
during ACL surgery
complications of, 103
graft harvest of
complications of, 101
in ACL reconstruction, **9–18**
endoscopic technique in, 11–16
endoscopic preparation for, 14
graft passage and fixation in, 16
patient positioning for, 11–12
semitendinosis graft harvest in, 12–13
semitendinosus graft preparation in, 13–14

surgical preparation for, 11–12
tunnel preparation in, 14–15
femoral double-socket technique in, 16–17
harvesting of, **1–8**
anatomy related to, 1–3
donor site pain with, 6
hamstring weakness with, 6–7
incision and exposure in, 3
morbidity rates with, 6–7
pitfalls of, 6
saphenous nerve damage with, 7
techniques in, 3–6
tendon isolation and stripping in, 3–6
postoperative rehabilitation, 17

Hip(s)
instability of
in Down syndrome children, 441–442
knee pain effects on, 377–378

Hoffa syndrome
anterior knee pain caused by, 378–379

Humeral shaft
throwing fracture of
in skeletally immature throwing athletes, 482

I

Iatrogenic instability
lumbar spinal stenosis with
treatment of, 290

Idiopathic anterior knee pain
in adolescents, **377–383.** *See also Anterior knee pain, idiopathic, in adolescents.*

Impingement syndrome
shoulder imaging in, 510–511

Inflammation
after ACL injuries
rehabilitation for, 113–114
nerve root injuries in patients with chronic low back pain caused by, 223–224

Inflammatory mediators
of degenerating intervertebral disk, 213–214

Instability
lumbar spinal stenosis resulting from, 288

Intervertebral disk
degeneration of. *See Intervertebral disk degeneration.*
function of, 264
structure of, 264

Intervertebral disk degeneration
at cellular level, 210–211
matrix proteins of degenerating disk, 212–214
mechanical involvement in, 214–217
molecular basis of, **209–219**
aggrecan in, 213
chondromodulin-I in, 213
collagen in, 212–213
fibronectin in, 213
growth factors in, 215–217
inflammatory mediators in, 213–214
protoglycan synthesis in, 212
molecular screens in, 217
morphology of, 209–210

Ischemia
juvenile osteochondritis dissecans due to, 342

J

Juvenile osteochondritis dissecans, **341–353**
bone scan in, 345–346
causes of, 341–342
clinical history of, 343
genetics of, 342
historical background of, 341
imaging of, 343–346
incidence of, 342
irregular ossification in, 343–344
ischemia and, 342
MRI of, 344–345
natural history of, 343
physical examination of, 343
prognosis of, 346
site of, 342
trauma and, 341–342
treatment of, 346–350
drilling for stable in situ lesions in, 347–349
nonsurgical, 346–347
salvage techniques in, 350
surgical, 347–350

Juxtafusion degeneration
failed decompression surgery for lumbar spine conditions resulting in, 317

Juxtafusion kyphosis
failed decompression surgery for lumbar spine conditions and, 315–316

Juxtafusion scoliosis
failed decompression surgery for lumbar spine conditions resulting in, 316–317

K

Knee(s)
arthritis in
management of, 561–562
valgus
in ACL reconstruction, 175–176
varus
in ACL reconstruction, 173–175

Kohler syndrome
in children, 449

Kyphosis
juxtafusion
failed decompression surgery for lumbar spine conditions and, 315–316
lumbar spinal stenosis with
treatment of, 292

L

Laminectomy
for failed decompression surgery for lumbar spine conditions, 313

Laminoplasty
distraction
for lumbar spinal stenosis, 287
expansive lumbar
for lumbar spinal stenosis, 287

Laminotomy(ies)
for lumbar spinal stenosis, 287

Lateral collateral ligament injury
rehabilitation for, 124

Lateral epicondylitis
in throwing athletes, 425

Lesion(s)
osteochondral
of talar dome
in children, 453–454

Little League elbow, 418–423

Little Leaguer's shoulder, 429–430

Low back pain
chronic
causes of
and posterior surgery, 297–298
core instability exercise in, **245–254.** *See also Core instability exercise, in patients with chronic low back pain.*
nerve root injuries in patients with, **221–230**
biomarkers indicating, 225–226
development of, 222–223
inflammation and, 223–224
mechanical compression and, 223
mechanisms of, 223–224
nerve root propagation mechanisms within nerve roots/DRG after, 224
regeneration after, 226
signs of, 224–225
nuclear replacement strategies for, **263–267.** *See also Nuclear replacement strategies, in patients with chronic low back pain.*
posterior surgery for, **297–308**
causes as factor in, 297–298
diagnostic modalities in, 298–299
fusion procedures in, 301–305
posterior lumbar interbody fusion, 303–304
posterolateral intertransverse fusion, 302
transforaminal lumbar interbody fusion, 304–305
indications for, 299–301
outcomes after, 301
prevalence of, 263
nerve root involvement in, 221–222

Lower extremity(ies)
rotational malalignment of
anterior knee pain caused by, 379

Lower extremity injuries
in pediatric athletes, 406–409
apophyseal injuries, 407–408
Osgood-Schlatter disease, 407–409
Sever's disease, 409
Sinding-Larsen-Johansson disease, 409
stress fractures, 406–407

Lumbar spinal stenosis, **281–295**
deformity and, 288
degenerative scoliosis with
treatment of, 292
degenerative spondylolisthesis, 288
treatment of, 288–290
disk excision with, 290–292
iatrogenic instability with
treatment of, 290
instability and, 288
junctional, 290
kyphosis with
treatment of, 292
natural history of, 281–282
recurrent, 288, 290
treatment of, 281–285
central canal stenosis, 285

lateral canal stenosis, 285–287
nonoperative, 282–283
surgical, 284
decompression through "port-hole" approach in, 287
decompression/laminotomy in results of, 288
distraction laminoplasty in, 287
expansive lumbar laminoplasty in, 287
indications for, 283
instrumentation in, 292
laminotomies, 287
less invasive decompression procedures in, 287–292
preoperative evaluation, 283–284
spinous process distraction devices in, 287–288
technique of, 284–285

Lumbar spine
control of
normal vs. abnormal, 246–249
degenerative conditions of
fusion surgery for
failed, 313
spinal decompression for
complications of, 319–320
efficacy of, 319–323
epidemiology in, 309–310
failed, **309–324**
adjacent level failures, 315–317
broken, loose, or painful implants, 318–319
fusion-related, 317–318
juxtafusion degeneration, 317
juxtafusion kyphosis, 315–316
juxtafusion scoliosis, 316–317
laminectomy for, 313
revision discectomy for, 310–312
revision microdiscectomy for, 313
flat back due to, 315
functional outcomes of, 320–323
patient profile in, 309–310
pseudoarthrosis due to, 313–315
safety of, 319–323

M

Magnetic resonance imaging (MRI)
gadolinium-enhanced
of shoulder in rotator cuff disease, 512–513
in chronic low back pain diagnosis, 298–299
in juvenile osteochondritis dissecans, 344–345
in rotator cuff disease, 511–512

Mechanical compression
nerve root injuries in patients with chronic low back pain caused by, 223

Medial collateral ligament injury
rehabilitation for, 124

Medial epicondyle apophysitis
in throwing athletes, 419–420
diagnosis of, 419
pathophysiology of, 419
risk factors for, 419
treatment of, 419–420

Medial malleolus ossification center
in children, 448

Meniscal allografts
in ACL reconstruction, 144–145

Meniscal disorders, **329–340.** *See also* specific disorders, e.g., *Meniscal tears.*
anatomy related to, 329–330
cysts, 338
development of, 329
discoid meniscus, 334–338
meniscal tears, 330–334

Meniscal tears, 330–334
differential diagnosis of, 331
epidemiology of, 330–331
history of, 331
imaging of, 331
in ACL reconstruction
approach to, **139–147**
allografts in, 144–145
future directions in, 146
indications for repair, 141–144
rehabilitation after, 145–146
surgical decision making in, 140–141
surgical timing in, 140
techniques for repair, 141–144
in torn ACLs
patterns of, 139–140
physical examination of, 331
rehabilitation after, 334
treatment of, 331–334

Meniscus(i)
anatomy of, 329–330
development of, 329
function of, 330
transplantation of
in ACL reconstruction, 179

Metatarsal(s)
fifth
fracture of base of
in children, 452–453

Meyers and McKeever classification
of tibial eminence fractures, 365–366

Microdiscectomy
revision
for failed decompression surgery for lumbar spine conditions, 313

MRI. *See Magnetic resonance imaging (MRI).*

Multidirectional instability (MDI)
arthroscopic management of, **549–557.**
See also Pancapsular plication, for multidirectional instability.
pathophysiology of, 549–550

Musculoskeletal pain
chronic
described, 239–240
treatment of
conceptual frameworks effect on, 240
patients' beliefs and response to, 241
vs. practitioners' beliefs and approaches to integration of, 242–243
practitioners' beliefs and approaches to, 240–241
process of care in, **239–244**

N

Nerve root(s)
anatomy of, 222–223
in low back pain, 221–222

Nerve root injuries
development of
nerve roots in, 222–223
in chronic low back pain injuries, **221–230.** *See also Low back pain, chronic, nerve root injuries in patients with.*

Nuclear replacement strategies
in patients with chronic low back pain, **263–267**
clinical results of, 266
historical perspective on, 264–266

O

Olecranon injury
in throwing athletes, 422

Os acromiale
in skeletally immature throwing athletes, 433

Osgood-Schlatter disease
anterior knee pain caused by, 378
in pediatric athletes, 407–409

Ossicle(s)
of foot and ankle
in children, 448

Osteochondral lesions
of talar dome
in children, 453–454

Osteochondrosis(es)
in children, 449

Osteotomy(ies)
arthritis and
in ACL reconstruction, **169–181.**
See also Arthritis, and osteotomies, in ACL reconstruction.

Overuse injuries
in pediatric athletes, **405–415**
described, 405–406
lower extremity injuries, 406–409
apophyseal injuries, 407–408
Osgood-Schlatter disease, 407–409
Sever's disease, 409
Sinding-Larsen-Johansson disease, 409
stress fractures, 406–407
spinal injuries, 411–413
spondylolysis, 412–413
upper extremity injuries, 409–411
elbow injuries, 410–411
epiphyseal injuries, 410–411
growth plate trauma, 411
physeal injuries, 410–411
rotator cuff tendonitis, 410
shoulder injuries, 410
stress fractures, 409–410

P

Pain
elbow
protracted
in throwing athletes, 423
musculoskeletal
treatment of
process of care in, **239–244**

Pancapsular plication
for multidirectional instability, **549–557**
clinical results of, 553–556
literature review of, 550–551
postoperative care, 553
technique of, 551–553

Panner's disease
in throwing athletes, 420–421

Patella
anatomy of, 385–387
biomechanics of, 387–388
bipartite
anterior knee pain caused by, 378

Patellar instability
acute and recurrent
in young athletes, **385–396**
classification of, 388–389
patellofemoral imaging of, 389–391
patient history in, 389
physical examination of, 389
risk factors for, 388
treatment of
nonoperative, 391–392
operative, 392–394

Patellar tendon
graft fixation of
during ACL surgery
complications of, 101–103
graft harvest of
during ACL surgery
complications of, 99–101
bone plug fracture, 99
breaching fat pad, 101
contaminated graft, 101
inadequate bone plug circumference, 100
narrow
graft harvest of
during ACL surgery
complications of, 99
rupture of
during ACL surgery, 101

Patellofemoral instability
in Down syndrome children, 442

Pelvis
control of
normal vs. abnormal, 246–249

Physis
injuries to
in pediatric athletes, 410–411

Posterior ankle impingement syndrome
in children, 456–457

Posterior cruciate ligament injury
rehabilitation for, 124–128

Posterior glenohumeral instability
arthroscopic repair of, **475–483**
diagnostic examination in, 477–478
indications for, 475–476
postoperative care, 481–482
preparation for, 477
results of, 482
techniques in, 479–480
augmentation of posterior repairs, 480–481
capsule shift, 479–480
suture anchor technique, 480
pathologic findings in, 476–477
symptoms of, 475

Posterior lumbar interbody fusion
for chronic low back pain, 303–304

Posterior surgery
for chronic low back pain, **297–308.** *See also Low back pain, chronic, posterior surgery for.*

Posterolateral intertransverse fusion
for chronic low back pain, 302

Protoglycan synthesis
of degenerating intervertebral disk, 212

Pseudoarthrosis
decompression surgery for lumbar spine conditions resulting in, 313–315

R

Radial head deformation
in throwing athletes, 421

Rehabilitation
after ACL injury surgery, 362
after ACL reconstruction in skeletally immature individuals, 74–75
after ACL reconstruction with arthritis and osteotomies, 176–177
after autogenous and allogeneic soft-tissue grafts in ACL reconstruction
surgical decisions related to, 22–23
after meniscal repair in ACL reconstruction, 145–146
after quadrupled semitendinosus autograft for ACL reconstruction, 17
after revision ACL reconstruction, 93
for meniscal tears, 334
for shoulder disorders in skeletally immature throwing athletes, 434
of ACL injuries
advances in, **107–137.** *See also Anterior cruciate ligament (ACL) injuries, rehabilitation of, advances in.*

Reverse humeral glenohumeral ligament avulsions (RHAGL lesions)
arthroscopic repair of, **475–483**
diagnostic examination in, 477–478
indications for, 475–476
postoperative care, 481–482
preparation for, 477
results of, 482
techniques in, 478–481
augmentation of posterior repairs, 480–481
capsule shift, 479–480
suture anchor technique, 480
pathologic findings in, 476–477
symptoms of, 475

Revision discectomy
for failed decompression surgery for lumbar spine conditions, 310–312

Revision microdiscectomy
for failed decompression surgery for lumbar spine conditions, 313

Revision notchplasty
in revision ACL reconstruction, 92

RHAGL lesions
arthroscopic repair of, **475–483.** *See also Reverse humeral glenohumeral ligament avulsions (RHAGL lesions), arthroscopic repair of.*

Rotator cuff
bursal side of
evaluation of
bursoscopy, 513–514
endoscopic, 513–514

Rotator cuff disease. *See also Rotator cuff tears.*
MRI in, 511–512
patient history in, 507–508
physical examination in, 508–510
shoulder imaging in, 510–511
gadolinium-enhanced MRI, 512–513

Rotator cuff injury
in skeletally immature throwing athletes, 432–433

Rotator cuff tears. *See also Rotator cuff disease.*
arthroscopic evaluation of, **507–520**
arthroscopic management of, **507–520**
classification in, 513
decision making in, 513
postoperative care, 518–519
SCOI experience in, 519
side-to-side rotator cuff sutures in, 515–516
steps in, 515
suture anchor fixation to bone, 516–517
suture savers in, 517–518
classification of, 514
arthroscopic, 513
decision making in, 514–515
massive
arthroscopic management of, 519–520

Rotator cuff tendonitis
in pediatric athletes, 410

Rotator interval lesions
arthroscopic repair of, **529–537**
Bankart reconstruction in, 532–534
historical perspective of, 529
indications for, 531–532
physical examination before, 530–531
postoperative care, 534–536
preoperative planning in, 530–531
techniques in, 532–534

S

Safety
of decompression surgery for lumbar spine conditions, 319–323

Salter Harris fractures
in children, 450

Sartorius muscle
anatomy of, 1–2

SCOI. *See Southern California Orthopedic Institute (SCOI).*

Scoliosis
degenerative
lumbar spinal stenosis with treatment of, 292
juxtafusion
failed decompression surgery for lumbar spine conditions resulting in, 316–317

Semitendinosus autograft
in ACL reconstruction, 9–11

Semitendinosus muscle
anatomy of, 2

Semitendinosus–gracilis graft
in ACL reconstruction, 51. *See also Anterior cruciate ligament (ACL), reconstruction of, semitendinosus–gracilis graft in.*

Sever's disease
in pediatric athletes, 409

Shoulder(s)
calcific tendinitis of, **567–575**
degenerative calcification in, 568
historical review of, 567
physical characteristics of, 568
radiographic evaluation of, 569
reactive calcification in, 569
treatment of, 569–574
ESWT in, 571
needle lavage in, 570–571
nonoperative, 569–570
surgical, 571–574
author's preferred technique, 573–574
developmental anatomy of, 428
ganglion cysts of, **521–529.** *See also Ganglion cysts, of shoulder.*
imaging of
in rotator cuff disease, 510–513
in rotator cuff tear assessment, 510–513
Little Leaguer's, 429–430
pathogenesis of, 567–568
suprascapular nerve of
anatomy of, 522–523
thrower's
arthroscopic management of, **539–547.** *See also Thrower's shoulder, arthroscopic management of.*

Shoulder disorders
in skeletally immature throwing athletes, **427–437**
acute proximal humeral physeal fracture, 430–431
clinical presentation of, 428
epidemiology of, 428
glenohumeral instability, 432
Little Leaguer's shoulder, 429–430
os acromiale, 433
physical examination of, 429
prevention of, 434–435
radiographic evaluation of, 429
rehabilitation for, 434
rotator cuff injury, 432–433
SLAP lesions, 433
superior labrum and biceps anchor pathology, 433
throwing fracture of humeral shaft, 482

Shoulder injuries
epidemiology of, 428
in pediatric athletes, 410

Shoulder pain
differential diagnosis of, 521

Side-to-side rotator cuff sutures
in arthroscopic management of rotator cuff tears, 515–516

Sinding-Larsen-Johansson disease
anterior knee pain caused by, 378
in pediatric athletes, 409

Skeletally immature persons
ACL injuries in, **355–363.** *See also Anterior cruciate ligament (ACL) injuries, in skeletally immature persons.*
ACL reconstruction in, **65–77.** *See also Anterior cruciate ligament (ACL), reconstruction of, in skeletally immature persons.*

SLAP lesions. *See Superior labrum anterior to posterior (SLAP) lesions.*

Southern California Orthopedic Institute (SCOI)
arthroscopic management of rotator cuff tears at, 519

Spinal injuries
in pediatric athletes, 411–413

Spine
cervical
in Down syndrome children, 441–442
lumbar
control of
normal vs. abnormal, 246–249

Spinous process distraction devices
in lumbar spinal stenosis treatment, 287–288

Spondylolisthesis, 466
degenerative
lumbar spinal stenosis with
treatment of, 288–290
spinal fusion for
return-to-play guidelines after, 466–467

Spondylolysis
defined, 461
in child and adolescent athletes, 412–413, **461–467**
imaging studies in, 462–463
patient history in, 462
physical examination in, 462
spinal fusion for
return-to-play guidelines after, 466–467
treatment of, 463–466
Wiltse-Newman classification of, 461

Sprain(s)
in children, 454–456

Stenosis(es)
central canal
treatment of, 285
lateral canal
treatment of, 285–287
lumbar spinal, **281–295.** *See also Lumbar spinal stenosis.*

Stress fractures
in children, 450–452
of lower extremity
in pediatric athletes, 406–407
of upper extremity
in pediatric athletes, 409–410

Subscapularis tears
arthroscopic management of, **484–497**
complications of, 494–495
postoperative care, 493–494
preoperative planning in, 486–487
technique in, 487–493
patient history in, 485–486
physical examination in, 485–486

Superior labrum anterior to posterior (SLAP) lesions
in skeletally immature throwing athletes, 433

Suprascapular nerve
anatomy of, 522–523

Suture(s)
side-to-side rotator cuff
in arthroscopic management of rotator cuff tears, 515–516

Synovial plica
anterior knee pain caused by, 378

T

Tarsal coalition
in children, 445–446

Tendinitis
calcific
of shoulder, **567–575.** *See also Shoulder(s), calcific tendinitis of.*
in children, 457
rotator cuff
in pediatric athletes, 410

Tendon(s). *See* Patellar tendon; *specific types, e.g.,* Allograft tendons.
hamstring
in ACL reconstruction, **9–18.** *See also Hamstring tendon, in ACL reconstruction.*

Tendon insertion syndrome
in children, 457

Tendon rupture
in throwing athletes, 424–425

Tenodesis
arthroscopic biceps, **499–506.** *See also Arthroscopic biceps tenodesis.*

TENS. *See Transcutaneous electrical nerve stimulators (TENS).*

Thrower's shoulder
clinical presentation of, 540–541
pathophysiology of, 539–540
treatment of, 540–546
arthroscopic management in, **539–547**
procedures in, 541–546
surgical
authors' preferences in, 542–546

Throwing
biomechanics of, 417, 427
skeletally immature athletes and
shoulder disorders in, **427–437.** *See also Shoulder disorders, in skeletally immature throwing athletes.*

Throwing athletes
elbow disorders in, **417–426.** *See also Elbow disorders, in throwing athletes.*

Throwing fracture of humeral shaft
in skeletally immature throwing athletes, 482

Tibial eminence avulsion
in ACL reconstruction in skeletally immature individuals, 75

Tibial eminence fractures, **365–375**
anatomy related to, 365–366
classification of, 365–366
complications of, 371–372
imaging of, 366
treatment of, 366–371
arthroscopic reduction in, 369–370
arthroscopic screw method in, 370–371
complications of, 371–372
discussion of, 372–373
open reduction in, 368–369
surgical techniques in, 368–371
suture methods in, 370
type I
treatment of, 366–367

type II
treatment of, 367–368
type III
treatment of, 367–368

Tibial tubercle
anatomy of, 397–398

Total shoulder arthroplasty (TSA)
for glenohumeral arthritis, **559–566**

Transforaminal lumbar interbody fusion
for chronic low back pain, 304–305

Transplantation
meniscal
in ACL reconstruction, 179

Trauma
growth plate
in pediatric athletes, 411
juvenile osteochondritis dissecans due to, 341–342

TSA. *See Total shoulder arthroplasty (TSA).*

Tunnel replacement
during ACL surgery
complications of, 103–104

U

UCL. *See Ulnar collateral ligament (UCL).*

Ulnar collateral ligament (UCL)
rupture of
in throwing athletes, 423–424

Ulnar nerve subluxation
in throwing athletes, 424

Upper extremity injuries
in pediatric athletes, 409–411
elbow injuries, 410–411
epiphyseal injuries, 410–411
growth plate trauma, 411
physeal injuries, 410–411
rotator cuff tendonitis, 410
shoulder injuries, 410

V

Valgus knee
in ACL reconstruction, 175–176

Varus knee
in ACL reconstruction, 173–175